**Introduction to MODIS**

This activity will introduce you to acquiring data from MODIS and examining some of the details of the data provided.

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| **Biome Type** | **Latitude** | **Longitude** |
| Tundra | 50.8822431111397 | -89.2144775390625 |
| Boreal Forest | 67.991108345 | 83.43017578125 |
| Temperate Forest | 48.978414317 | 11.206054687 |
| Tropical Rain Forest | -2.7235830833483856 | 20.9619140625 |

**Ordering a MODIS Dataset**

You will need the longitude and latitude for your site and an email address where you can receive the data. It may take several days depending upon the number of orders ahead of your order.

**Procedure**

1. Go to <http://daac.ornl.gov/cgi-bin/MODIS/GLBVIZ_1_Glb/modis_subset_order_global_col5.pl>
2. Enter the latitude and longitude for one of the biomes above in the appropriate boxes and click “Continue”.
3. Select “Leaf Area Index (LAI) from the menu and change the numbers in the boxes below from the default value of “3” to “1”.
4. Click on “Continue”
5. Select the longest possible time frame offered in the next screen.
6. Enter the email address where you would like to receive the data.
7. Click on “Continue”
8. Click on “Create Subset”
9. Click on back arrow until you get to the screen in step 3 above.
10. Select “Evapotranspiration” and then repeat steps 3 through 9.
11. Select “Gross Primary Productivity” and repeat steps 3 through 8.

You should receive three separate emails containing an interactive data download. It will be available at the provided URL for about 30 days. After that it will disappear.

**Phenology Markers**

**Leaf Area Index (LAI)**

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| --- | --- | --- | --- | --- | --- |
| **Biome type**  **(location)** | **Year** | **First Minimum Day** | **Maximum Day** | **Second**  **Minimum Day** | **Number of Days in Growing Season** |
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**FPAR**

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| **Biome type**  **(location)** | **Year** | **First Minimum Day** | **Maximum Day** | **Second**  **Minimum Day** | **Number of Days in Growing Season** |
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**Gross Primary Productivity (GPP)**

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| **Biome type**  **(location)** | **Year** | **First Minimum Day** | **Maximum Day** | **Second**  **Minimum Day** | **Number of Days in Growing Season** |
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**Evapotranspiration (ET)**

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| **Biome type**  **(location)** | **Year** | **First Minimum Day** | **Maximum Day** | **Second**  **Minimum Day** | **Number of Days in Growing Season** |
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**Questions**

*Use Internet or textbook to answer the following questions*:

1. Define: LAI, FPAR, GPP and ET
2. What relationship would you expect between these terms?
3. What are the units of each of these terms. Can you explain those units?
4. Use the longitude and latitude for each of the sites. In what region and country are each of the biome types located in?

*Use the data output you received in your email to answer these questions*:

5. What parts of the growing season do each of the values recorded in the table correspond to? ( hint: spring, summer, fall???)

6. How do each of the key parameters (LAI, FPAR, GPP and ET) vary from biome type to biome type?

7. Look for patterns of changes in each of the growing seasons markers from year to year. Are they changing? How are they changing?

**Sample MODIS Output**

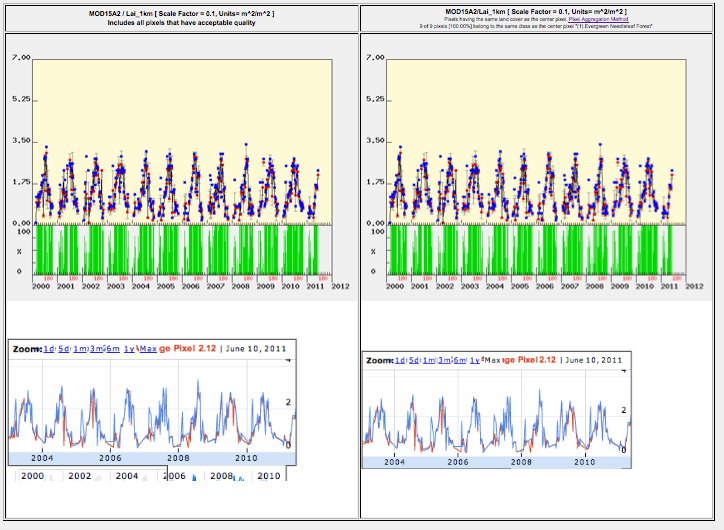
**Active until July 20, 2012.**

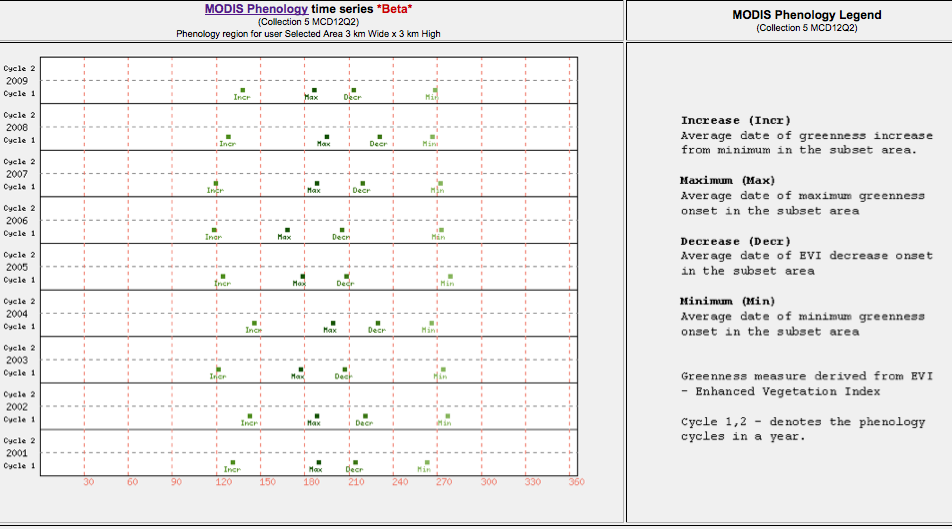
**LAI & FPAR**

<http://daac.ornl.gov/glb_viz_2/20Jun2012_11:08:18_539899219L50.8822431L-89.214477S3L3_MOD15A2/index.html>

**ALBEDO**

[**http://daac.ornl.gov/glb\_viz\_2/20Jun2012\_11:13:21\_018664762L50.8822431L-89.214477S5L5\_MCD43A/index.html**](http://daac.ornl.gov/glb_viz_2/20Jun2012_11:13:21_018664762L50.8822431L-89.214477S5L5_MCD43A/index.html)

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